

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Atty. Docket

BERNARDUS H.W. HENDRIKS ET AL

NL000659

Filed: CONCURRENTLY

Title: OPTICAL SCANNING DEVICE

Commissioner for Patents, Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

Prior to calculation of the filing fee and examination, please amend the above-identified application as follows:

IN THE CLAIMS

Please amend the Claims to be in the form as follows. A marked up copy of the claims is included in an appendix following this amendment for the Examiners convenience.

4. An optical scanning device according to claim 1, wherein the rms wavefront error caused by the comatic aberration generated by the objective lens at a maximum required field angle with respect to the axial direction, as compensated by the non-periodic phase structure, is less than  $40m\lambda$ .

6. An optical scanning device according to claim 1, wherein said non-periodic phase structure includes a plurality of annular zones, each of said zones comprising a step of a substantially

constant height with respect to a rotationally symmetrical aspheric shape generally followed by said objective lens.

8. An optical scanning device according to claim 6, wherein the radial widths of said zones are selected in dependence on the comatic aberration to be compensated for.

11. An optical scanning device according to claim 8, wherein said zones comprise a zone (b) with a nonzero height, measured in relation to said aspheric shape, located in the region in which the normalized pupil coordinate  $\rho$  ranges from 0.9 to 1.00.

13. An optical scanning device according to claim 6, wherein the heights of said zones are selected substantially optimally in relation to the comatic aberration to be compensated for.

14. An optical scanning device according to claim 7, wherein the number of said zones is greater than four.

15. An optical scanning device according to claim 8, wherein the number of said zones is less than ten.

16. An optical scanning device according to claim 9, wherein said non-periodic phase structure is formed on the surface of said objective lens.

REMARKS

The foregoing Preliminary Amendment to the claims was made solely to avoid filing the claims in the multiple dependant form so as to avoid the additional filing fee.

The claims were not amended in order to address issues of patentability and Applicants respectfully reserves all rights they may have under the Doctrine of Equivalents. Applicants furthermore reserves their right to reintroduce subject matter deleted herein at a later time during the prosecution of this application or continuing applications.

Respectfully submitted,

By 

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## APPENDIX A

4. An optical scanning device according to ~~any of claims 1 to 3~~ claim 1, wherein the rms wavefront error caused by the comatic aberration generated by the objective lens at a maximum required field angle with respect to the axial direction, as compensated by the non-periodic phase structure, is less than  $40m\lambda$ .

6. An optical scanning device according to ~~any preceding~~ claim 1, wherein said non-periodic phase structure includes a plurality of annular zones, each of said zones comprising a step of a substantially constant height with respect to a rotationally symmetrical aspheric shape generally followed by said objective lens.

8. An optical scanning device according to claim 6 ~~or 7~~, wherein the radial widths of said zones are selected in dependence on the comatic aberration to be compensated for.

11. An optical scanning device according to claim 8, ~~9 or 10~~, wherein said zones comprise a zone (b) with a nonzero height, measured in relation to said aspheric shape, located in the region in which the normalized pupil coordinate  $\rho$  ranges from 0.9 to 1.00.

13. An optical scanning device according to ~~any of claims 6 to 12~~ claim 6, wherein the heights of said zones are selected

substantially optimally in relation to the comatic aberration to be compensated for.

14. An optical scanning device according to ~~any of claims 6 to 13~~ claim 7, wherein the number of said zones is greater than four.

15. An optical scanning device according to ~~any of claims 6 to 13~~ claim 8, wherein the number of said zones is less than ten.

16. An optical scanning device according to ~~any preceeding~~ claim 9, wherein said non-periodic phase structure is formed on the surface of said objective lens.